

## **Remarks**

### Status of application

Claims 1-3, 5-8, 10-19, 21-24, and 26-30 were examined and stand finally rejected in view of prior art, as well as stand rejected for technical issues. This Amendment After Final is filed in an effort to address non-prior art rejections and objections made by the Examiner in the final rejection. Applicant respectfully requests the entry of the amendments to the specification and claims made in this Amendment After Final so as to narrow the grounds on Appeal. In addition, and in response to the Examiner's statements in final rejection, Applicant has specifically indicated the limitations of Applicant's claims which distinguish Applicant's invention from the prior art of record and respectfully requests the Examiner to reconsider the rejection of Applicant's claims based on the prior art of record.

### General

#### A. Amendments to Specification

In the Final Office Action, the Examiner objected to the amendments to the Specification and the Abstract submitted by Applicant as improper. Applicant has resubmitted the amendments to the Specification and Abstract with the additions to the text underlined and with deleted text crossed-out or double bracketed as provided in 37 C.F.R. 1.121(b), thereby overcoming the objection. (It should be noted that underlining and strikethrough in this Amendment After Final indicate changes from the original text of Applicant's Specification and Abstract).

In the above-described amendments to the Specification, Applicant has amended the specification to include references for several trademarks, including Btrieve, Java, and Unix as requested by the Examiner. However, Applicant takes no position as to the validity or ownership of any such trademarks or whether any such referenced trademarks serve to identify any particular products.

#### B. Objections to Claims

The Examiner objected to claims 12 and 28 on the basis that the limitation "reusing the cache view" lacks antecedent basis in the Specification. The Examiner also

states that "reusing" can have more than one interpretation when discussing cache blocks and neither the instant specification nor the instant claims appear to define how it should be interpreted in the claims. Applicant has amended claims 12 and 28 to replace the word "reusing" with the word "sharing" which is specifically described in Applicant's specification including, for example, at paragraph [0072] which describes a plurality of read-only transactions (e.g., 5 read-only transactions) sharing the same cache view.

#### C. Section 112, first paragraph rejection

The Examiner has rejected claims 1, 12, 17, and 28 under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement stating that these claims contain subject matter that was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The Examiner rejects claims 1 and 17 on the basis that the recited "cache view" limitation is not enabled. Applicant respectfully disagrees with the Examiner as the cache view is described in detail in Applicant's specification, including, for example, at paragraph [0047] which provides as follows:

With read-only transactions the methodology of the present invention provides for introducing another cache view. This new cache view is for the same database as the write cache view but it is a separate view of the database. In general terms, it is a view of a version of a database at a particular point in time. The approach of the present invention involves using the cache in order to create a view of the database at a particular point in time. Since details regarding all changes to the database are recorded in the transaction log file(s), the transactional log file(s) may be used to reconstruct a view of the database at this particular point in time. The view is constructed by applying log records to this view in the cache, so as to create a version of the database at a particular point in time.

(Applicant's specification, paragraph [0047], emphasis added)

As described above, the cache is used to create a view of a database at a particular point in time. This view, which Applicant refers to in the specification and claims as a "cache view" represents a read-only, transactionally consistent view of the database at a particular point in time (Applicant's specification, paragraph [0071]). The view is reconstructed in cache by logically undoing all incomplete transactions at that point in

time (i.e., at the point in time when the read-only version or view is to be reconstructed). With Applicant's approach, transactions that were started but unfinished (at the time that the read-only transactionally consistent view is to be reconstructed) are logically undone (Applicant's specification, paragraphs [0082]-[0083]). Thus, Applicant's approach provides for maintaining a view of transactionally-consistent prior state of the database in cache which can be used for performing long-duration read-only transactions (e.g., DSS, reporting, data mining, or the like) without blocking the performance of other transactions (e.g., locks). Although Applicant believes that the term "cache view" is enabled, Applicant has amended claims 1 and 17 (as well as dependents thereof) to replace the term "cache view" with the term "read-only view" and has made other clarifying amendments, thereby overcoming this rejection.

The Examiner has also rejected claims 12 and 28 stating that Applicant's specification does not indicate how the "cache view" is "reused". Applicant has amended claims 12 and to replace the word "reusing" with the word "sharing" as noted above in the remarks regarding the Examiner's objections to these same claims.

In view of the above remarks and the amendments to the claims made herein, Applicant respectfully suggests that the rejection of the claims 1, 12, 17 and 28 under 35 U.S.C. 112, first paragraph is overcome.

#### D. Section 112, second paragraph rejection

The Examiner has rejected claims 6, 8, 22 and 24 under 35 U.S.C. Section 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. As to claims 6 and 22 the Examiner states that these claims include claim limitations of "an allocation bitmap"; however, the Examiner indicates is claim 6 is a method claim and therefore cannot "provide" a device. Applicant has amended claim 6 to refer to use of an allocation bitmap, thereby overcoming this rejection. Claim 22 is not a method claim and therefore Applicant respectfully believes that no amendment to claim 22 is necessary.

The Examiner has also rejected claims 8 and 24 on the basis that the phrase, "a temporary database allocated to save off a modified block from the cache view" is unclear. Applicant has amended claims 8 and 24 to replace the words "save off" with the

words "temporarily store", thereby overcoming this rejection.

#### E. Section 101 rejection

Claims 1-3, 5-8, 10-19, 21-24, and 26-30 stand rejected under 35 U.S.C. 101 on the basis of non-statutory subject matter. Here, the Examiner states that Applicant's claimed invention does not produce a tangible result because the claim limitations providing for "returning a result comprising a transactionally consistent version of the given database supporting read-only uses" remains in the abstract and, thus, fails to achieve the required status of having real world value. Applicant's claimed invention provides for maintaining a "read-only view" (which represents a transactionally-consistent prior state of the database) in cache and using this view for performing read-only transactions (e.g., DSS, reporting, data mining, or the like) without blocking the performance of other transactions. Applicant has amended claim 1 and claim 15 to including limitations of performing the read-only transaction using the read-only view and returning results of the read-only transaction; thereby describing a concrete and tangible result.

The Examiner additionally rejects claim 15 stating which includes claim limitations of a "computer-readable medium having processor-executable instructions" on the basis that the instructions may not have been executed and rejects claim 16 on the basis that the "downloadable set of processor-executable instructions" may have not been downloaded and could be downloaded on a non-statutory carrier wave. Applicant respectfully believes that claims 15 and 16, which are dependent upon claim 1 overcome the rejection under Section 101 for the reasons stated above with respect to claim 1. However, Applicant has amended claim 16 to more clearly state claim 16 as a method claim.

In addition, the Examiner states that claims 17-19, 21-24, and 26-30 do not require any hardware, making it software *per se* and hence non-statutory. However, Applicant respectfully believes that the Examiner has incorrectly construed Applicant's specification as stating that the elements of Applicant's invention can only be implemented in software. In fact, Applicant's specification expressly states that the elements may be implemented in hardware, software or firmware (or combinations

thereof). This is expressly stated, for example, at paragraph [0033] of Applicant's specification as follows: "...the corresponding apparatus element may be configured in hardware, software, firmware or combinations thereof" (Applicant's specification, paragraph [0033], emphasis added). Applicant's specification also describes in detail a computer hardware and software environment in which Applicant's invention may be implemented (Applicant's specification, paragraphs [0035]-[0045]). Moreover, Applicant states that the software (computer-executable instructions) direct operation of a device under processor control, such as a computer (Applicant's specification, paragraph [0063]). As Applicant's claim defines a useful machine or item of manufacture in terms of a hardware or hardware and software combination, Applicant respectfully believes that it defines a statutory product

Accordingly, it is respectfully submitted that in view of the above-mentioned amendments, the rejection of Applicant's claims 1-3, 5-8, 10-19, 21-24, and 26-30 under Section 101 on the basis of non-statutory subject matter is overcome.

#### Prior Art Rejections; Request for Reconsideration

In the Examiner's final rejection, the Examiner states that Applicant's arguments amount to a general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references. As discussed below, Applicant claims include limitations which clearly distinguish Applicant's invention from the prior art and Applicant respectfully requests the Examiner to reconsider the rejection of these claims based on the prior art of record.

Applicant's invention provides for creating a "read-only view" of the database that can be used for performing read-only transactions in a manner that avoids blocks between the read-only transactions from being blocked by exclusive transactional locks of write transactions. Applicant's methodology also avoids having long duration read-only transactions block write transactions with long duration shared transactional locks. An important aspect of Applicant's invention is the use of logical undo operations for constructing a read-only view which represents a transactionally consistent version of the database at a given point in time. In a given database environment, one may have

multiple database users with intermingled write operations occurring against the database, some of which have committed while others are still pending. Applicant's approach provides a mechanism to reconstruct a transactionally consistent "read-only view" of the database by **logically undoing all incomplete transactions** at the point in time when the read-only version or view is to be reconstructed. This is specifically indicated as a limitation of Applicant's claims including, for example, claim 1 which includes the following claim limitations:

for a read-only transaction of a given database, creating a read-only view of a given database using the given database's transaction log, said read-only view comprising particular database blocks in the shared cache that record a view of a particular version of the database at a given point in time; **wherein creating the read-only view includes logically undoing transactions which have begun but have yet to commit so that the read-only view comprises a transactionally consistent version of the given database supporting read-only uses**; creating a shadow cache for storing any database blocks that overflow said shared cache during use of the read-only view by the read-only transaction; and performing the read-only transaction using the read-only view and returning results of the read-only transaction.

(Applicant's claim 1, as amended, emphasis added)

Applicant's review of Hayashi and the other prior art of record finds no teaching of the creation of a transactionally consistent prior version of the database supporting read-only uses. In particular, neither Hayashi nor the other prior art references provide any teaching of logically undoing incomplete transactions in the creation of a transactionally consistent prior version of the database in the manner provided in Applicant's specification and claims. As the prior art references cited by the Examiner do not teach or suggest the claimed features of performing logical undo operations in creating a transactionally consistent prior version of the database supporting read-only uses, it is respectfully submitted that Applicant's claimed invention is distinguishable over the prior art of record.

### Conclusion

Applicant respectfully requests the entry of the amendments to the specification and claims made in this Amendment After Final so as to narrow the grounds on Appeal.

Applicant also requests the Examiner to reconsider the prior art rejections based on the amendments to the claims and the remarks set forth herein.

If for any reason the Examiner feels that a telephone conference would in any way expedite prosecution of the subject application, the Examiner is invited to telephone the undersigned at 925 465-0361.

Respectfully submitted,

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